Climate Futures

Central New Mexico Climate Change Scenario Planning Project

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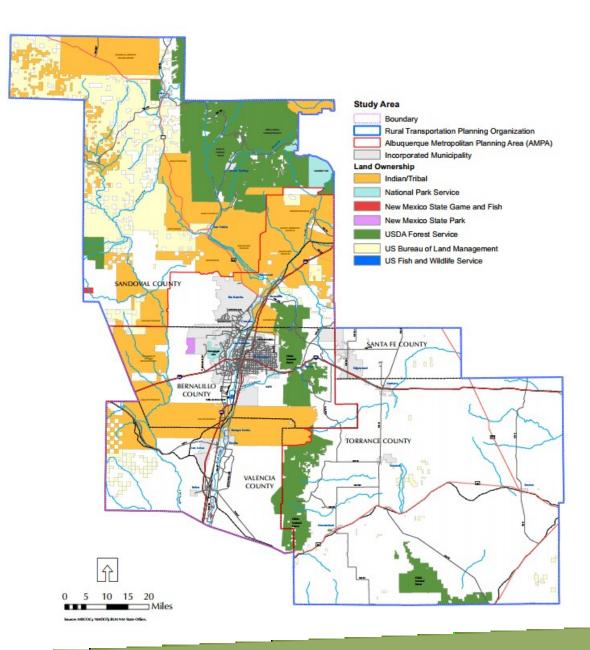






Outline

- □ Background
- □ Data & methodology
- Overview of findings
- □ Individual findings
- □ Implications



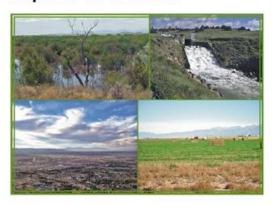
Background

- Regional climate futures derived from:
 - Project-developed tool (Volpe, NPS, and BOR)
 - Literature review (CLIMAS, BOR, other)
- □ Independent of land use and transportation scenarios

RECLAMATION

Managing Water in the West

West-Wide Climate Risk Assessment: Upper Rio Grande Impact Assessment





December 2013

Data & Methodology

□ Baseline: 1950-1999

□ Future: 2025-2055 (centered)

on 2040)

Southwest Albuquerque

Variables

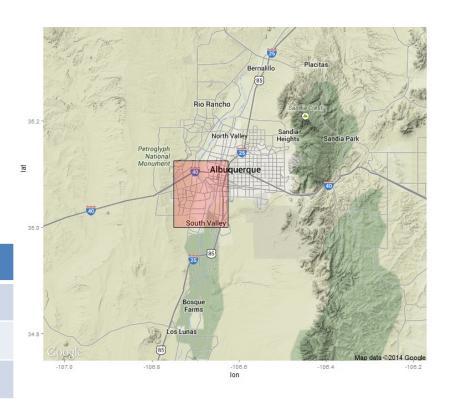
Precipitation (mm/day)

Maximum daily temperature (°C)

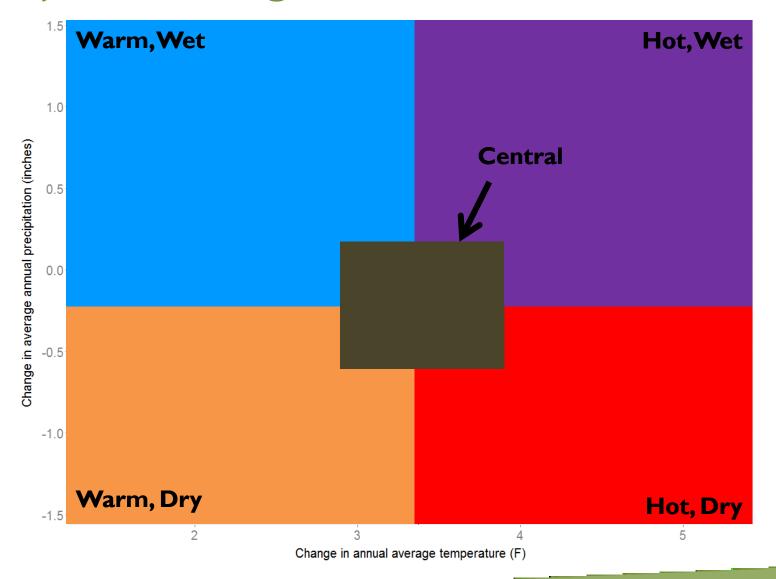
Minimum daily temperature (°C)

Average daily temperature (°C)—derived by averaging max & min

Average daily wind speed



Projected Changes in Climate Means - 2040



Central NM Climate Futures - 2040

Warm, Wet

- +2.4 °F in average daily maximum temperature
- +0.55" in average annual precipitation
- 2X more days > 100 °F than the current 5 days
- 2.1X more consecutive days > 100 °F than the current 2 days
- Slight increase in avg. max 24-hr precipitation (7.8%)

Wetter



Hot, Wet

- +4.1 °F in average daily temperature
- +0.15" in average annual precipitation
- 4X more days > 100 °F than the current 5 days
- 3.3X more consecutive days > 100 °F than the current 2 days
- Slight increase in avg. max 24-hr precipitation (5.9%)

Hot

Central

- +3.5 °F in average daily maximum temperature
- -0.26" in average annual precipitation
- 3.3X more days > 100 °F than the current 5 days
- 3.2X more consecutive days > 100 °F than the current 2 days
- Slight decrease in max 24-hr precipitation (-0.03%)



Hotter

Warm, Dry

- +2.9 °F in average daily maximum temperature
- -0.87" in average annual precipitation
- 2.8X more days > 100 °F than the current 5 days
- 2.6X more consecutive days > 100 F than the current 2 days
- Slight decrease in avg. max 24-hr precipitation (-5.1%)

Precipitation

Hot, Dry

- +4.3 °F in average daily maximum temperature
- -0.74" in average annual precipitation
- 4.3X more days > 100 °F than the current 5 days
- 3.7X more consecutive days > 100 F than the current 2 days
- Slight decrease in avg. max 24-hr precipitation (-6.5%)

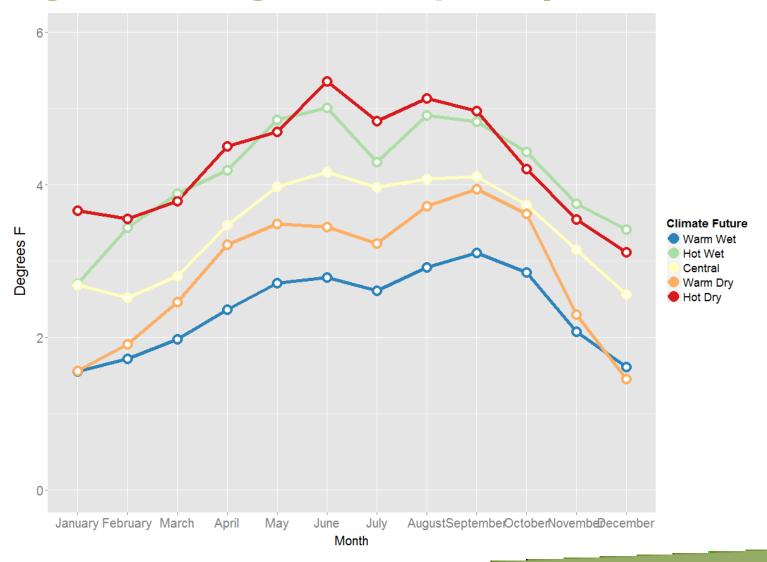
Drier



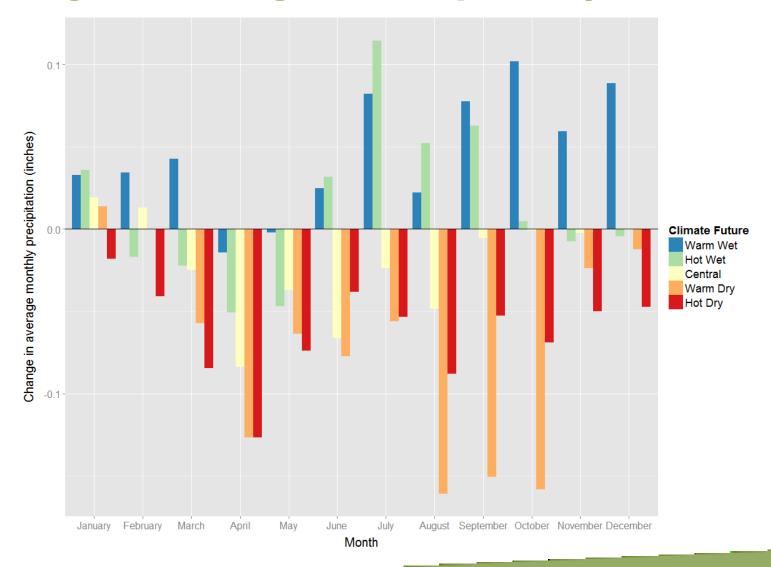
Downscaled Findings

- Monthly temperature change
- Monthly precipitation change
- □ Annual days >100 °F
- □ Consecutive days >100 °F (Heat wave indicator)
- Maximum 24-hr precipitation amounts (Flash flood indicator)

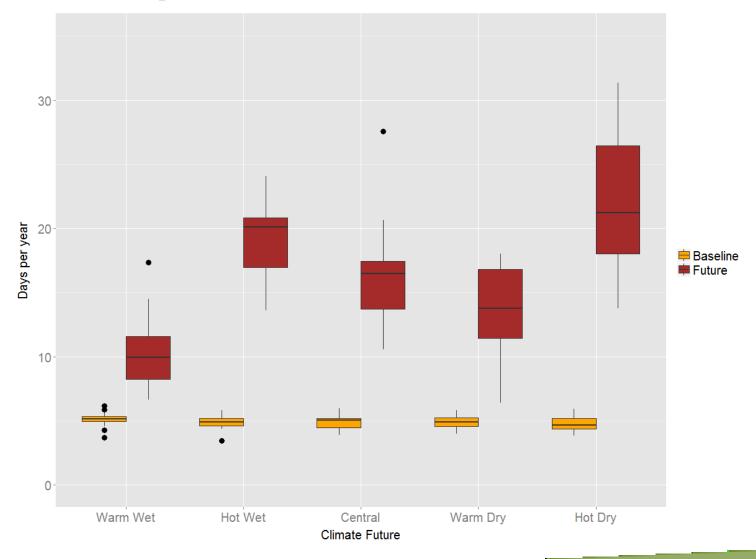
Change in Average Monthly Temperature



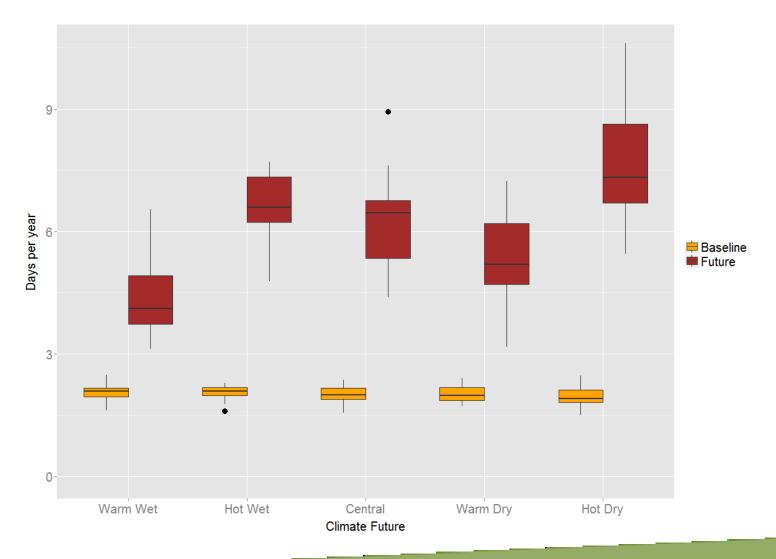
Change in Average Monthly Precipitation



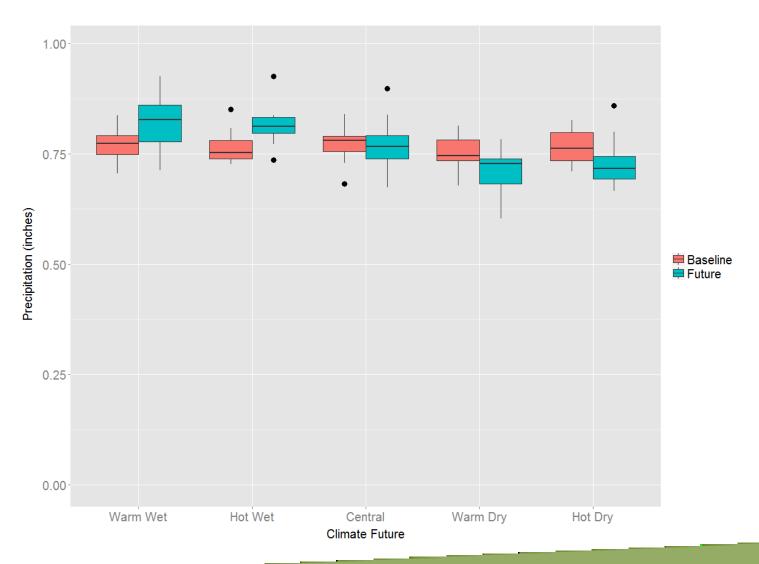
Annual Days > 100 °F



Consecutive Days > 100 °F



Maximum 24-hr Precipitation Amounts



Big Picture Climate Implications

- Greater changes in temperature than in precipitation
- □ Projected **2.4 °F to 4.3 °F increase in annual temperature**
- Projected -13% decrease to +10% increase in annual precipitation (Bureau of Reclamation)
- More pronounced temperature increases in the summer
- More drought regardless of precipitation due to the increased evaporation from higher temperature
- More, longer heat waves
- More extreme, variable precipitation events

Implications for the Region

□ Transportation-related

- Higher maintenance costs (e.g., faster pavement deterioration)
- Construction and operations implications (e.g., shorter construction season)
- More damage from extreme events (e.g., flash floods, wildfires, and landslides)

□ Land Use/Regional Planning

- More frequent water shortages
- Greater power demand
- Higher vulnerability for development near riparian areas/on the urban-wildland interface

Questions?

